REMARKS

Original claims 1-6 have been canceled without prejudice in favor of new claims 7-22.

Review and reconsideration on the merits are requested.

Preliminarily, Applicants request the Examiner to acknowledge receipt of the certified copy of the priority document as filed in parent Application No. 09/789,710.

Claims 1-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,282,689 to Imamura et al in combination with U.S. Patent 5,804,536 to Asao et al or U.S. Patent 5,650,380 to Fletcher. Imamura et al was cited as disclosing a rolling bearing including a lubricant composition comprising a polyphenyl ether based oil within the scope of the claimed base oil and a diurea thickener in an amount of 2 to 35 wt%, which lubricant composition may also contain known additives such as oxidation inhibitors, rust preventives, extreme pressure additives, etc. The Examiner relied on Asao et al and Fletcher as disclosing the addition of conventional rust preventives to lubricating grease compositions. The reason for rejection was that it would have been obvious to add the known rust-preventive additives such as the half ester succinate of Asao et al and the zinc naphthenate component of Fletcher to the lubricant composition of Imamura et al, further citing Imamura et al as allowing for the addition of conventional grease additives as needed.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the amendment to the claims and the following remarks.

The present invention is remarkable for its function and advantage in preventing early flaking accompanying white structure change occurring when a rolling bearing is used under high temperature, high speed and high load conditions. This flaking accompanying the white

structure change is a phenomenon specifically generated on a raceway surface in a load area on a fixed ring of a rolling bearing. The flaking accompanying the white structure change is generated under high load, high temperature, high speed revolution and high equipment vibration conditions. The use for which the phenomenon is comparatively easily generated includes a rolling bearing for use in electric parts for an automobile. The present inventors have found that a rust-preventive additive generates considerable flaking accompanying the white structure change. As a result of extensive study for solving this problem, the inventors have found that a composition having the necessary rust-preventive ability and comprising an additive which does not generate flaking accompanying the white structure change or a combination of additives at a most appropriate amount is suitable as a grease for use in a rolling bearing subjected to high temperature, high speed and high load conditions. The present invention has been achieved based on the above findings The additives include a naphthenate or a succinic acid derivative and the amount of each additive is from 0.05 to 10 % by weight. The above object and advantage are described in [0003] and [0006] and Figs. 1 and 2 of US 2002/0082175 A1 - the paragraph bridging pages 1-2 and page 3, lines 16-22 of the specification.

Imamura et al describes most suitable conditions for oxygen content in steel and the kind and viscosity of a base oil as elements which effect primary flaking. However, Imamura et al only describes that any additive having been generally known can be used. Imamura is silent about the relationship between the additives and flaking accompanying the white structure change. The flaking accompanying the white structure change may be facilitated or may be inhibited depending upon the kind of additives. "A metal sulfonate as an organic inhibitor is

used widely for its high rust-preventive ability, however, since it facilitates generation of a hydrogen as disclosed in Japanese Patent No. 2,878,749, it may cause generation of flaking by the hydrogen brittleness" (see [0005], lines 20 to 24 in US 2002/0082175 A1). The inventors of the present invention have found a composition for inhibiting the flaking accompanying the white structure change, having a good rust-preventive ability and taking the environment into consideration. Imamura et al neither describes nor suggests the function of inhibiting (and accelerating) the flaking, the rust-preventive function and the function of taking the environment into consideration.

Asao et al describes a half ester succinate as a rust-preventive additive of a lubricating composition for use in a harsh environment where salt water is present. However, Asao et al is similar to Imamura and is silent about the relationship between the additives and the flaking accompanying the white structure change, which is a function and advantage of the present invention. Asao et al also focuses attention on only rust-preventive ability of the half ester succinate. Asao et al also describes that barium sulfonate can be suitably used similar to the half ester succinate, as the rust-preventive additive. Accordingly, Asao et al is not concerned with flaking.

Fletcher describes a metal salt of naphthenic acid as a friction-wear inhibitor of the grease for use in the constant velocity joints. However, Fletcher is silent about the relationship between the additives and the flaking accompanying the white structure change, which is a function and advantage of the present invention. The damage pattern of the constant velocity joints is the wear of a sliding surface or the degradation of grease due to frictional heat. Therefore, there was

a need to reduce the friction (coefficient) of the grease. Fletcher describes that the use of zinc naphthenate and ZnDTP and the like together as the additives for constant velocity joints reduces the friction coefficient. However, Fletcher is silent about the effect of the single use of zinc naphthenate.

As described above, the cited references, i.e., Imamura et al, Asao et al and Fletcher, each neither describes nor suggests the flaking prevention function (facilitation function) of additives. Accordingly, it is difficult to expect the composition of additives and the addition ratio according to the present invention from the three cited references. In particular, the cited references neither describe nor suggest that the use of zinc naphthenate and a succinate half ester together at the addition amount of 0.1 to 10 wt % brings about a most superior flaking prevention effect and rust-preventive ability, at all. The object, composition and function and advantage of the invention relative to the cited references is set forth in the chart below.

Object	Composition	Function and Advantage	Relation To Cited Reference		
			1	2	3
[This invention] US2002/0082175 A good rust-preventive ability, Excellent flaking life, excellent life at high temperature, excellent vibration resistance, and excellent load resistance	Claim 7 A grease comprising metal naphthenates and/or succinic acid derivatives in an amount of 0.1 to 10 % by weight Claims 8-11, 14 and 15 Metals of alkenyl/alkyl succinic acid ester/half ester or naphthenate include Zn, Al, Ca, Ba, Li, Mg; an addition amount is from 0.25 to 5% by weight. Kinematic viscosity of base oil: 10-400, preferably 20-250, and more preferably 40-150 (mm^2/sec) taking noise generated at low temperature into consideration Base oil: preferably a synthetic oil Thickener: preferably diurea taking the heat resistance and the generation of a noise into consideration	Good rust-preventive ability	×	O	×
		Flaking life is not reduced by the addition.	×	×	
		Excellent life at a high temperature, Excellent vibration resistance, Excellent load resistance, Prevention of noise generation	o	×	×
		Flaking test 6303 2400-13300 rpm 180kgf 500h			
[Cited Reference 1] US 5,282,689 Long flaking life	Claim 1 Base oil: ether oil 9-160 mm^2/sec at 40°C Oxygen content in steel: 6 ppm or less	Extension of flaking life Insufficient because of using one additive Flaking test 6303 9000-18000 rpm 160kgf 500h			

[Cited Reference 2] US 5,804,536 Solid lubricant Excellent rust-preventive ability	Claim 1 As rust-preventives component, Sulfonate and/or fatty acid partial ester (an addition amount is not described; according to Example, the amount is from 1 to 2%) Claim 2 Barium sulfonate Half ester succinate	Only excellent rust-preventive ability			
[Cited Reference 3] US 5,650,380 Reduced friction Coefficient Use for constant velocity joints	Claim 1 A combination of (MoS_2), (Zinc naththenate: 0.05-12%) and (DTC of any of Zn, Mo, Sn, W and Bi) Claim 2 Thickener: urea	Reduced friction Coefficient SRV test			

Withdrawal of all rejections and allowance of claims 7-22 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 1-6 are canceled.

Claims 7-22 are added as new claims.